

18 Utilization of Coal Ash, Tires, Sludge and Other Items

C O N T E N T S

Coal Combustion By-Product Utilization Policy	
Municipal Waste Sludge as Soil Amendment on Mined Lands	
Memorandum of Understanding between Office of Waste Management and OMR	

SUBJECT:	Coal Combustion By-Product Utilization Policy
DATE:	January 13, 1998

I. Applicable Provision of State Law

The West Virginia Department of Environmental Protection (WVDEP) Division of Mining and Reclamation (OMR) recognizes the need for guidance to the mining, utility, and manufacturing industries on the beneficial use of coal combustion by-products and the disposal of coal combustion wastes. The OMR further recognizes that coal combustion by-products and coal combustion wastes have both beneficial uses and the potential to provide positive impacts where properly managed. The following policy provides the necessary guidance and required criteria for the beneficial use of coal combustion by-products regulated under Articles 2, 3, or 4 of Chapter 22 of the West Virginia Code, so long as such placement is in conformance with an approved plan or permit issued pursuant to such provisions of the code.

Coal combustion by-products means the residuals, including fly ash, bottom ash, bed ash, boiler slag, and flue gas emission control waste produced by coal-fired or coal/gas-fired electrical or stream generating units which are beneficially used. Coal combustion wastes means these same materials which are disposed of and not beneficially used.

Coal combustion waste disposal and coal combustion by-product utilization are not defined as solid waste according to the Solid Waste Management Act Section 22-15-2.27 of the West Virginia Code, when placed on a facility regulated under Articles 2, 3, or 4. Coal combustion waste disposal and coal combustion by-product utilization are subject to the applicable Surface Coal Mining and Reclamation Act, the Surface Mining and Reclamation of Minerals Other than Coal Act, Abandoned Mine Lands and Reclamation Act, the Water Pollution Control Act, and the Groundwater Protection Act. This document addresses beneficial uses of coal combustion by-products. A document addressing the disposal of coal combustion wastes on mined areas may be developed at the discretion of the Secretary.

II. Permits, Revision, and Modifications

The OMR may approve the utilization of coal combustion by-products for a beneficial use as described in an application for an Article 3 or 4 permit or revisions to existing permits. Coal combustion by-products may also be used when approved by the DEP Office of Abandon Mine Lands (AML) under Article 2.

For pre-approved uses, as described in this policy, a written notification shall be deemed sufficient to meet the permit revision application requirements. Pre-approved utilization notifications shall automatically, without further agency action, constitute an insignificant revision to the Article 3 or 4 permit and/or minor modification to the National Pollution Discharge Elimination System (NPDES) permit. Permit revisions for acceptable beneficial uses listed below will be subject to the provisions of the Code of State Regulations (CSR) 38-2-3.28 and will generally be handled as insignificant revision to the Article 3 and/or minor modification to the NPDES permit. Permit revisions of Article 4 and related NPDES permits will be subject to the provisions of CSR 47-10-9.2.

The beneficial use of coal combustion by-products on surface mining and quarry operations will be evaluated by the OMR in accordance with plans, design specifications, testing procedures, and monitoring requirements as set forth and submitted on the MR-36 form. The MR-36 form will serve as an element to both Article 3 or 4 permit application and the NPDES permit application. Coal combustion by-products may be utilized on a mining operation only within the permit area, or within such permit area as modified to accommodate the beneficial use of coal combustion by-products.

III. Beneficial Uses

Pre-approved uses and examples of acceptable beneficial uses are listed below. Beneficial uses other than those listed below will be evaluated by OMR on a case-by-case basis through the evaluation of plans, design specifications, results of testing and analysis of the coal ash, water quality sampling and analysis, overburden analysis, and conformity with the applicable laws and regulations of the State.

A. Pre-approved uses include:

1. Subsidence control as part of a confined cementitious mixture.
2. Abatement of underground mine fires as part of a cementitious mixture.

Pre-approved uses will require written notification at least 30 days prior to initiation of such use. The notification will include a description of the use, start and completion dates, a map showing the area where the use will occur, details on the proposed mix including components and proportions, and the estimated amount of coal combustion by-product to be used. The 30-day notification period may be waived at the discretion of the Secretary.

B. Acceptable beneficial uses include:

1. Coal combustion by-products may be used as a soil amendment, subject to the provisions of applicable regulation.

2. Coal combustion by-products may be used as a source of alkaline addition to neutralize potentially acid-producing materials in the following: (a) coarse coal refuse, fine coal refuse, and combined coal refuse disposal sited (b) backfills, conventional excess spoil disposal fills, and (c) to line pit floors subject to the applicable regulations and the following criteria.

- a. Coal combustion by-products used for neutralizing potentially acid-producing materials in coarse coal refuse, fine coal refuse, and combined coal refuse disposal sites shall comply with the following requirements:

- i. The net neutralization potential of the coal combustion by-product(s) shall be greater than or equal to 5 tons per 1000 tons CaCO_3 equivalent, and
- ii. The minimum application of coal combustion by-product will be determined by the formula:

Where:

A = Required amendment (in tons)

W = Amount of waste rock: refuse to be neutralized (in tons)

%S = Percent sulfur in waste rock, e.g. 2% = 2 tons per 100 tons of rock

%NNP = Percent net neutralization potential of amendment, e.g. %NP - %MPA (NP = Neutralization Potential, MPA = Maximum Potential Acidity)

$$A = \frac{(W \times \%S \times 3.125)}{\%NNP} \times 1.1$$

NOTES:

Pyritic sulfur may be substituted for total sulfur.

The S and NNP are percentages which make them tons per 100 rather than tons per 1000. The formula was provided by Paul Ziemkiewicz of the National Mine Land Reclamation Center at West Virginia University.

- iii. The ratio of coal combustion by-product(s) to refuse shall not exceed 8:1 calculated on a weight basis.
- b. Coal combustion by-products used for neutralizing potentially acid-producing materials in backfills and conventional excess spoil disposal fills shall comply with the following requirements:
 - i. The net neutralization potential of the coal combustion by-product(s) shall be greater than or equal to 5 tons per 1000 tons CaCO_3 equivalent, and
 - ii. The minimum application of coal combustion by-product will be determined by the formula:

Where:

A = Required amendment (in tons)

W = Amount of waste rock: refuse to be neutralized (in tons)

%S = Percent sulfur in waste rock, e.g. 2% = 2 tons per 100 tons of rock

%NNP = Percent net neutralization potential of amendment, e.g. %NP - %MPA (NP = Neutralization Potential, MPA = Maximum Potential Acidity)

$$A = \left(\frac{W \times \%S \times 3.125}{\%NNP} \right) \times 1.1$$

NOTES:

Pyritic sulfur may be substituted for total sulfur.

The S and NNP are percentages which make them tons per 100 rather than tons per 1000. The formula was provided by Paul Ziemkiewicz of the National Mine Land Reclamation Center at West Virginia University.

The addition of coal combustion by-products for alkaline addition will not be allowed if it will significantly increase the volume of excess spoil.

Neutralization potential of the spoil or backfill material may be considered in certain cases at the discretion of the OMR.

- c. Coal combustion by-products used for lining pit floors shall comply with the following requirements:
 - i. The net neutralization potential of the coal combustion by-product(s) shall be greater than or equal to 20 tons per 1000 tons CaCO_3 equivalent, or
 - ii. The coal combustion by-product(s) must exhibit pozzolanic properties.

Coal combustion by-products proposed as a source of alkaline addition not meeting the above criteria may be evaluated by the OMR on a case-by-case basis. The application of coal combustion by-products as an alkaline additive should be uniformly mixed/blended throughout the material to be neutralized.

- 3. Coal combustion by-products may be utilized to encapsulate potentially toxic material. Coal combustion by-products exhibiting a low hydraulic conductivity (less than or equal to 1×10^{-5} cm/sec) may be used to provide a low permeability zone around toxic materials.
- 4. Coal combustion by-products may be utilized to replace coal refuse removed from a coal refuse pile, where the removal of the coal refuse is for the purpose of fueling a coal-fired or coal refuse-fired electric power generating facility. Only the coal combustion by-products generated from the facility may be utilized. The utilization of coal combustion by-products shall be subject to the provisions of CSR 38-2-22 provided that the moisture content of the coal combustion by-products as specified in the application is within the range required to achieve suitable compaction, and is placed in one foot lifts and compacted to ninety percent standard proctor.
- 5. Coal combustion by-products may be utilized to fill underground voids or to reduce acid mine drainage discharges or otherwise improve water quality in permitted or abandoned sites in accordance with the applicable regulations.
- 6. Coal combustion by-products may be used to improve the stability and/or enhance the material handling characteristics of coal refuse disposal

facilities subject to the provisions of the applicable regulations and section III(B)(2)(a) of this policy.

7. Coal combustion by-products may be used to prevent and control spontaneous combustion or to otherwise control burning of coal refuse disposal facilities subject to the provisions of the applicable regulations.
8. Coal combustion by-products may be used to return disturbed areas to approximate original contour (AOC), where additional fill is required to properly reclaim the site, only after using all available spoil material subject to the provisions of the applicable regulations.
9. Coal combustion by-products (bottom ash or boiler slag) may be used as anti-skid material, if such use is consistent with West Virginia Division of Highways specifications.
10. Coal combustion by-products may be used as a partial replacement for soil in covering coal refuse disposal facilities (coarse coal refuse piles, combined coal refuse disposal facilities, and coal refuse slurry impoundments) subject to the provisions of the applicable regulations.
11. Coal combustion by-products may be used to construct base material for roads, parking areas, storage areas, etc., to stabilize foundation soils.
12. Coal combustion by-products may be used in accordance with the plan, as approved, on abandoned mine land (AML) reclamation and no-cost reclamation projects subject to the requirements of Article 2. Coal combustion by-products may be used for Special Reclamation Projects subject to the requirements of Article 3 and 4.
13. Coal combustion by-products may be used in demonstration projects. The DEP encourages demonstration projects which will allow monitoring of beneficial use applications of coal combustion by-products and the collection of data to allow the evaluation of beneficial use performance.
14. Coal combustion by-products may be used for the construction of liner systems. The evaluation of the liner system shall be included in the application and shall include engineering analysis and laboratory testing. The acceptability of liner systems shall be determined on a case-by-case basis.
15. Coal combustion by-products may be used for sealing of underground mine openings.

More than one coal combustion by-product may be utilized on a permit so long as the overall coal combustion by-product mixture is determined to meet the criteria in Items 1 through 15 above.

C. Coal combustion by-products may be used in other applications as approved by the Secretary.

IV. Water Quality

Surface and ground water monitoring stations for the purpose of monitoring coal combustion by-product leachates at coal combustion by-product facilities may be established at appropriate locations so as to satisfy the requirements of both the Surface Mining Act (SMCRA) and the NPDES program. In the event that discharge points are established at different locations than the designated monitoring stations, analysis of water at the discharge point will include the same chemical parameters as for the monitoring station.

V. Coal Combustion By-Product Assay

The coal combustion by-products or wastes to be utilized on a surface mining or quarry operation will be analyzed and tested by the applicant for the parameters and properties set forth in the MR-36 form. Periodic retesting of the coal combustion by-products may be required from time to time by the OMR, provided that the Toxicity Characteristic Leaching Procedure (TCLP) test (for metals only) shall be performed, at least annually.

In the event that the source of the coal combustion by-products or wastes being utilized or disposed of on a permit area changes, prior approval for the change must be requested on an updated MR-36 form and all required testing and analysis shall be performed on the coal combustion by-products from the new source.

Coal combustion by-products, which exhibit potentially toxic or potentially acid producing characteristics, will not be approved for beneficial use.

Coal combustion by-products may be modified by the generator prior to shipment. If this is the case, the modified coal combustion by-products or wastes shall be analyzed and reported on the application form as such.

VI. Permitting Decision

The decision on issuance or denial of an application for a permit and revision or modification of an existing permit will be in accordance with Chapter 22, Articles 3 and 4 of the Code of West Virginia. This decision will be based on an interpretation of: the mining and reclamation plan; sampling, testing, and analytical data; and other information known or made available to the Secretary. The Secretary's decision will be in favor of minimizing risk to the environmental integrity of the State's air, land, and water.

SUBJECT: Municipal Waste Sewage Sludge as Soil Amendment on Mined Lands

DATE: March 16, 1993

No sewage sludge disposal is allowed on any mining operation unless the permittee submits and obtains approval of a permit revision from the Division of Mining and Reclamation and the producing facility is permitted by the Office of Water Resources. The revision application for sludge disposal must contain a copy of a permit and approved sludge disposal plan issued by the Department of Environmental Protection, Office of Water Resources. The revision required for sludge use as a soil amendment or additive will be in the form of a non-significant revision to the revegetation plan.

The following procedures shall apply to non-significant permit revisions for use of sewage sludge:

1. Each request for a permit revision will be submitted on forms prescribed by the Secretary, signed by an accountable official of the applicant and notarized.
2. The applicant shall submit five (5) copies of the revision proposal.
3. A map must be submitted which shows all of the original permit area and the area proposed for sludge disposal/use.
4. Maps must be signed by the inspector, if he/she recommends approval. The revision must also be reviewed by the permit review team.
5. The applicant must submit a cover letter describing the type and purpose of the proposed revision.
6. The revision package must include a copy of the approval issued by the Office of Water Resources for the land application project, i.e. sewage sludge disposal.
7. The information submitted must include the sewage sludge application rate as approved by the Office of Water Resources, and copies of all analyses of the sewage sludge as required by the Office of Water Resources.
8. The final decision to approve or deny the permit revision will be made by the Department of Environmental Protection regional permit supervisor in consultation with the I & E Supervisor.

NOTE: This policy is included in the I & E Handbook, Series 9, Page 1

MEMORANDUM OF UNDERSTANDING

THIS Memorandum of Understanding, executed in duplicate, made and entered into this 27 day of JANUARY, 1997, by and between the Office of Waste Management ("OWM") of the West Virginia Division of Environmental Protection, party of the first part, and the Office of Mining and Reclamation ("OMR") of the West Virginia Division of Environmental Protection, party of the second part.

WHEREAS, OMR, duly established and empowered under the provisions of W.Va. Code §22-1-7(2), to, among other things, regulate surface mining in this state as set forth in W.Va. Code §22-3-1 et seq., and, more specifically issue permits as well as administer the Surface Coal Mining and Reclamation Act;

WHEREAS, OWM, duly established and empowered under the provisions of W.Va. Code §22-1-7(6), to, among other things, control the disposal of solid waste as set forth in W.Va. Code §22-15-1 et seq., more specifically, the placement of waste tires as said term is herein defined;

NOW, THEREFORE, for and in consideration of the mutual obligations and covenants hereinafter set forth, the parties hereto agree as follows:

1. The **OWM** agrees that the placement of waste tires at mining permits issued pursuant to Article 3, Chapter 22 of the W. Va. Code does not require a permit issued pursuant to Article 15, Chapter 22 of the W. Va. Code so long as the conditions hereinafter set forth are adhered to, to wit:

- A. "Waste tires" shall mean off road mining equipment tires generated at the permitted mining operation. (Note: This specifically excludes tires from vehicles licensed to operate on county, state, or federal highways.)

- B. The permittee shall be required to revise the surface mining permit to reflect waste tire disposal. This permit revision shall be subject to a one time advertisement and ten day comment period. The application for such permit revision must contain, at a minimum, the following:
- (1) Notarized, written permission from the surface owner to place waste tires on the permitted area.
 - (2) A plan which outlines that the permittee will comply with all conditions specified herein.
 - (3) A suitable map which identifies the general area for the planned waste tire disposal.
- C. Waste tires must be generated by the permitted operation. (Waste tires generated elsewhere are prohibited).
- D. Waste tires may not be placed in the 100 yr. flood plain, wetlands or within 100 feet of a surface drainage channel or within the limits of proposed valley fills.
- E. Waste tires must be placed in a single layer, under a sufficient depth of overburden in a manner that will assure that the waste tires do not emerge, create a potential for fire, or provide harborage for disease-carrying vectors. The media where waste tires are disposed shall have a minimum of 5.0 pH (Std. Units) and the depth of cover shall be greater than twenty (20) feet in all directions. Waste tires shall be placed on solid ground and covered in a manner that will ensure long-term stability, prevent surface subsidence and ponding of surface water.

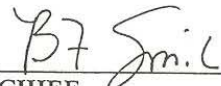
F. The permittee shall maintain at the mine-site or nearest office, monthly reports detailing the number, origin, and size of all waste tires disposed on the permitted site. The permittee must maintain a site map of the exact location of waste tire disposal and shall record a deed notation with the County Clerk's Office that shall be available with the deed. This will notify any potential purchaser that waste tires have been disposed of on the site. A copy of the site map and reports must be made available for review to the local inspector upon request and a copy submitted to the regional DEP office annually.

2. The OMR will notify the OWM of all mining permits which are revised to provide for placement of waste tires. The OWM agrees that mining permits upon which notification has been received will be inspected by OMR to assure compliance with the terms of this agreement and the revised permits.

3. This agreement may be cancelled at any time by either of the parties hereto upon written notice of the other party.

IN WITNESS WHEREOF, the parties hereto have caused their respective names to be signed by their duly authorized representative.

OFFICE OF WASTE MANAGEMENT
WEST VIRGINIA DIVISION OF
ENVIRONMENTAL PROTECTION



CHIEF

OFFICE OF MINING AND RECLAMATION
WEST VIRGINIA DIVISION OF
ENVIRONMENTAL PROTECTION



CHIEF